

SILICON CARBIDE IMPRINT STAMP

ABSTRACT

A method of fabricating a silicon carbide imprint stamp is disclosed. A mold layer has a cavity formed therein. A spacer is formed in the cavity to reduce a first feature size of the cavity. A casting process is used to form a feature and a foundation layer connected with the feature. The spacer operatively reduces the first feature size of the feature to a second feature size that is less than the lithography limit. The foundation layer and the feature are unitary whole made from a material comprising silicon carbide (**SiC**), a material that is harder than silicon (**Si**) alone. Consequently, the silicon carbide imprint stamp has a longer service lifetime because it can endure several imprinting cycles without wearing out or breaking. The longer service lifetime makes the silicon carbide imprint stamp economically feasible to manufacture as the manufacturing cost can be recouped over the service lifetime.